



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

M/053/002

JAN 18 1995



Ref: 8HWM-ER

G. William Lamb
Acting State Director
United States Department of the Interior
Bureau of Land Management
Utah State Office
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Salt Lake City, Utah 84111-2303

DOGM
MINERALS PROGRAM
FILE COPY

Dear Mr. Lamb:

This letter responds to yours dated November 4, 1994. The United States Department of Interior, Bureau of Reclamation (BOR) and the United States Environmental Protection Agency (EPA) have considered the Bureau of Land Management's (BLM) comments, and the comments prepared by the State of Utah, Department of Natural Resources Division of Oil, Gas, and Mining (UDOGM) dated October 25, 1994 and attached to your letter.

EPA's and BOR's responses to your specific comments follow the numbering system established by your letter. EPA shares your concern that this clean-up be conducted in a professional, efficient, and cost effective manner, and that all affected parties be provided with the opportunity to participate effectively in the process.

Many concerns which you summarized in your general comments have been addressed in the specific comment responses. Your concern that public lands will be used as a disposal site is shared by EPA. However, moving the heap leach that was placed on public lands by 5M, Inc. would cost millions of dollars. In addition, any movement would require an appropriate repository for the material, and preparation for such a site, assuming one could be found, would also be cost-prohibitive. Therefore, it is EPA's considered opinion that the heap leach pad will have to be utilized as the location for the containment of the material that is potentially causing a release to the environment.

Liability for future releases, if any should occur, is a complex issue. EPA, and we believe, the State of Utah Department of Environmental Quality Division of Environmental Response and Remediation (UDERR) do not consider the BLM as an owner/operator of the facility that generated, transported, or contributed to the hazardous substances potentially causing a release to the environment. EPA is also not seeking funds from BLM to defray past and future costs at the site. Therefore, actions to date support the statement that BLM would not necessarily be held



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liable for future releases unless BLM personnel actively contribute to the situation that caused a release or a threat of a release. In summary, I suspect that for future releases, EPA would pursue the same potentially responsible parties that were pursued for this activity.

Long term monitoring needs have not been determined. EPA will monitor the site for one year, and may, if warranted, continue for a year or so afterward. If long-term monitoring is necessary, EPA may order PRPs to conduct it. Local BLM personnel may find it prudent to conduct periodic drive-bys during regular duties in the area. The design, however, should alleviate concerns regarding long-term monitoring, as discussed in the specific responses.

SPECIFIC COMMENTS

1. EPA is going to conduct and fund all five items.

Water in the holding pond will be used for dust control. Approximately 10,000 gallons remain at this time. If any water is left, it will be treated with a 50% caustic soda solution by addition to the pond (or to the remaining water which we would contain in a temporary holding vessel) via a fine spray. Once the pH is elevated to 9.5-10 range, most of the metals should precipitate. Approximately five drums of 50% NaOH will be necessary to do this. State of Utah Department of Environmental Quality Division of Water Quality personnel will review any proposed discharge from the site to the wetlands.

Approximately 1000 gallons of water remain in the pregnant pond. This water will also be treated with caustic soda to drop out the heavy metals. The water will then be evaporated utilizing a high pressure sprayer, taking advantage of the dry desert air. Residual liquids would be treated by addition of diatomaceous earth.

Data contained in the EPA report entitled "Final Report, Field Investigation, Leeds Silver Site, Leeds, Utah" dated July 1993 support the conclusion that sediment in both the pregnant pond and holding pond are not RCRA hazardous wastes. TCLP metals are not found in the sediment in high enough total concentrations. The TCLP method contains a twenty-fold dilution. The total metals concentration must be at least 20 times the regulatory limit at the start of the TCLP procedure for there to be any chance that the sediment would be classified as a RCRA hazardous waste.

2. The state can decide this, the money is not essential to the EPA Removal action.
3. Following the design engineer's visit to the site, it was determined that the sludge, asphalt liner and underlying contaminated soils will be relocated to the pregnant pond fill area and capped.
4. The area to be enclosed under the cap (heap leach pad and the pregnant pond) was more thoroughly sampled in 1993 by the Environmental Protection Agency (EPA). Results can be found in the "Final Report, Field investigation, Leeds Silver Site, Leeds, Utah, July 1993."
5. The geosynthetic clay liner utilizes bentonite clay which is a naturally occurring soil material. The geomembrane and geonet materials are composed of high density polyethylene which is an inert compound. The effective life of this material is 225,000 years based on oxidation.
6. It has been determined that the geosynthetic clay liner is a more practical hydraulic barrier. The main reasons are:
 - 1) the ease and time saved for installation;
 - 2) significantly reduced quality control and quality assurance which would otherwise be required for the natural clay;
 - 3) prevents further damage to the local environment which would result from a clay excavation; and
 - 4) lack of an adequate on-site supply of useable clay.

It should be pointed out that the design calls for 2 to 3 feet of natural soils plus a layer of waste rock overlying the geosynthetics. Reclamation appreciates comment on selecting appropriate forbs and shrubs for the site. Reclamation, as part of the design to limit access on the site is presently considering a waste rock cover over the cap in lieu of constructing a fence to discourage recreation use. Other reasons for this rock covering include 1) the lack of suitable topsoil in the region and 2) the difficulty of establishing the plant growth in an arid environment. Therefore, the use of shrubs or forbs may not be desirable.

7. See response No. 6.
8. Whereas subsurface soil samples located in the wetland were found to contain mercury, remediation cannot be undertaken without destroying the wetlands. EPA feels that a more prudent course of action is to stabilize one potential source for the contamination, namely the heap leach. Breaching of the dike to allow free-flow of surface runoff should not increase contamination of any of these areas.

9. This issue will be addressed in the design.
10. The capping design concept is to restrict water from percolating through the heap leach materials. By restricting any water migration through the pile, the contaminant pathways will be eliminated.

A drilling program was conducted by Reclamation to determine the current condition of the leach pad asphalt liner and to determine the depth and to calculate the volume of the heap leach pad, not to characterize the contaminants of the pile. Results of samples taken in the heap leach pad can be found in the 1991 UDERR report.

Fifteen holes were drilled using an auger, with drill holes being backfilled with bentonite. The locations of these drill holes are listed on the location map included with the "Preferred Plan Remediation Report". Using drill holes, it is impossible to determine the integrity of the asphalt liner at all points. However, it was discovered that a layer of clay several feet thick exists under the entire liner. This clay layer will prevent migration of contaminated particles or water from being released into the environment. This issue will be further discussed in the design of the cap.

No drilling was performed in the pregnant pond. Design is considering a bentonite layer at the bottom of the pond.

11. The electrowinning cells contain process residue that concerns EPA. These cells will be emptied and rinsed. Contents and rinsate will be treated as discussed in the response to No. 1.
12. Additional monitoring wells may be necessary to confirm the long-term integrity of the capping action. Additional monitoring wells and monitoring requirements will be addressed in the design. A manhole will be designed to be placed at the lower end of the leach pad/pregnant pond. This manhole will be used to monitor leachate and as a sump if pumping is required.

The question regarding monitoring was addressed in the responses to your general comments.

13. The response to No. 1 above discusses RCRA and the TCLP test. Toxicity testing includes all metals, not just RCRA-regulated metals. For instance, copper and zinc are toxic to aquatic organisms, and are CERCLA hazardous substances, but are not RCRA-regulated metals. Please provide to EPA

your draft policies regarding solidification of non-hazardous waste. We can then respond to the particular concern inherent in the last sentence of the first paragraph.

Because of the change in plans, where asphalt will be removed and placed under the cap, the concern regarding sampling of remaining sediment is moot.

14. Section 4.0 Ore Piles - should read, "The ore piles will be excavated of their contaminated material and placed into the pregnant pond and onto the heap leach pad." The fine textured material will be used as bedding material for the geosynthetics.
15. Data from the sampling conducted by UDERR indicates that the ore pile does not contain contaminants at levels that threaten public health or welfare. In order for there to be an environmental threat, there must be a migration pathway from the ore and tailings piles to a sensitive environment. The heap leach meets these criteria because it generates an acidic leachate that is a threat to public health and to the environment. The ore pile and tailings pile do not, as there is no migration pathway. No leachate is generated. No significant run off to the wetlands or to other surface water bodies can be documented. However, as noted above, it is our intention to utilize these stockpiles for capping purposes to the extent practicable, as long as the integrity of the cap is not compromised.
16. Water samples were not analyzed for chemical content because of existing data from previous studies.

It is the intent of the "Preferred Plan Remediation Report" to breach the dike to allow free-flow of surface runoff water into the wetland area. This effort will prevent any possible overflow of the holding pond, and allow for a more natural water flow path.

Upon inspection of the dike in January 1994, water was low in the ponds and there were no apparent seeps under or through the dike. Therefore, no seeps from the dike were mapped. A sample was obtained from the pond below the dike in the wetland area.

Asphalt in the breached area of the dike and underlying the sludge in the holding pond will be removed and relocated to be encapsulated with the heap leach material.

17. Trip report, dated December 14, 1989, by John Hultquist of Utah Bureau of Radiation Control (BRC), and Jason Knowlton of the Bureau of Solid and Hazardous Waste, concludes "No areas were located with radiation levels which were substantially above background or which presented a significant hazard. The highest reading obtained was approximately twice the background level and was located on top of the leach pad near the north end of the pad. A soil sample was taken from this location and will be analyzed for radioactive emissions by BRC." The results of this soil sample was 6 pCi/g for Beta gross, and 6 pCi/g for Alpha gross. Based on this information, Reclamation does not consider radioactivity of the materials a concern. However, as part of the design, a personnel monitoring program will be suggested as part of the Site Safety and Health Plan.
18. The location of the monitoring wells were included on the site location map enclosed with the "Preferred Plan Remediation Report". The monitoring wells were drilled with the intent of characterizing the piezometric water surface of the local groundwater system and to determine the existence of the acid water. No chemical data other than the pH at present has been obtained from these wells by Reclamation. In addition to these existing wells, a monitoring system will be developed in the pregnant pond fill area which will consist of a perforated manhole with its base at the deepest part of the pregnant pond. Also, there will be a cased and sealed well installed in the pregnant pond fill area with its base located below the asphalt liner.
19. Superfund Removal procedures require EPA to determine where Federal and state requirements are appropriate, relevant and applicable, and if they are, then they must be practicable. In the case of NEPA, EPA has determined that it is not applicable. NEPA is an administrative requirement, and is not substantive. EPA Superfund procedures include voluminous documentation that meet or exceed NEPA documentation, and it is not the intent of either statute to duplicate efforts. The Removal action proposed is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Parts 9 and 300, as published in the Federal Register on Thursday, September 15, 1994 (Vol. 59, No. 178).

EPA has stated that public participation will be solicited as stated in Superfund policies. In short, Fact Sheets will be issued to local and state media, government agencies, other interested parties, and any identified individuals. Based on the response to the next Fact Sheet, EPA may hold a

public meeting. An Administrative Record is being prepared, and will be placed in a library in St. George. A public "Responsiveness Summary" will be prepared based on responses received from the public.

BOR is providing draft designs to BLM. BLM comments will be considered and incorporated as appropriate. BOR will then provide a final design to BLM, and this too will be subject to BLM scrutiny. I have already set up a meeting on-site with BLM and BOR to go over draft preliminary designs.

20. EPA will address only the environmental and public health/welfare issues at the site. Physical hazards and general reclamation activities are not included.

COMMENTS PROVIDED BY THE STATE OF UTAH, DEPARTMENT OF NATURAL RESOURCES, DIVISION OF OIL, GAS AND MINING.

1. Capping of the heap leach pad will be undertaken by EPA, as will removal of corrosive waste in a tank south of the site, PCB clean-up of the warehouse, removal and disposal of 5-gallon cans of ignitable waste north of the site, and clean-out of the electrowinning cells. Ore piles and tailings stockpiles on the site will be used as supplementary fill and as bedding material as required and as previously discussed. Physical hazards and general mine-site reclamation cannot be funded with Superfund.
2. The water in the holding pond will be used for dust control. Remaining water may be contained in a temporary holding pond or tank, depending on volume. These are off-the-shelf items that are readily available. If used, the units will be rinsed and removed to be used again. Rinsate will be treated, if necessary, and as determined by sampling and analysis if appropriate. Discharges to the wetland, if they occur, will be reviewed by UDWQ.
3. See response to comment No. 1 above and to BLM comment No. 15.
4. Asphalt in the breached area of the dike and underlying the sludge in the holding pond will be removed and relocated to be encapsulated with the heap leach material. The current design plans do not address cleaning the remaining asphalt.

Fifteen holes were drilled using an auger, with drill holes being backfilled with bentonite. The locations of these drill holes are listed on the location map included with the "Preferred Plan Remediation Report". Using drill holes, it is impossible to determine the integrity of the asphalt liner at all points. However, it was discovered that a layer of clay several feet thick exists under the entire liner. This clay layer will prevent migration of contaminated particles or water from being released into the environment. This issue will be further discussed in the design of the cap.

5. A "french drain" system will be used only for subsurface interception for water above the cap. Surface water will be intercepted by surface ditches or channels and routed off the site. Expected maintenance will consist primarily of removal of sluff material from the hillsides. This should only occur following large rain events. The design will

attempt to address some type of bank stabilization or other protection to eliminate as much maintenance as possible.

Reclamation will use the hundred year storm information to design channels, ditches, etc..

6. A drilling program was conducted by Reclamation to determine the current condition of the leach pad asphalt liner and to determine the depth and to calculate the volume of the heap leach pad, not to characterize the contaminants of the pile. Results of samples taken in the heap leach pad can be found in the UDERR 1991 report.

As part of the investigation, an attempt was made to identify a lime source in the area. Lime was not found to be readily available, therefore, the costs of both purchasing and transporting lime would be excessive. To neutralize the complete heap leach it would require a pug mill operation completely removing or relocating the heap leach materials to effectively mix the neutralizing agent. Neutralizing the pile would not address heavy metals or other contamination if it exists. Therefore, the most cost effective method would be to cap without neutralization.

The underdrain pipes which exist under the heap leach pad will be directed to a vertical manhole located at the lowest point in the pregnant pond fill area. This manhole will be used to monitor the cap for performance and potential failure.

7. A monitoring system will be developed in the pregnant pond fill area which will consist of a perforated manhole with its base at the deepest part of the pregnant pond. Also, there will be a cased and sealed well installed in the pregnant pond fill area with its base located below the asphalt liner. See also response No. 6.

Sampling frequency, etc., will be evaluated following construction of the cap. In our response to the general comments, we provided some information regarding monitoring.

8. The ore piles (sand) located on the site will be used as needed as bedding for the geosynthetic. The geosynthetic clay liner utilizes bentonite clay which is a naturally occurring soil material. The geomembrane and geonet materials are composed of high density polyethylene which is an inert compound. Since the liners are to be buried, thus eliminating UV degradation, the type of degradations which may be expected for the geomembrane are oxidation and microbiological. The microbiological degradation is not

considered a problem as no microbes are known to attack polyethylene. For a well stabilized polyethylene, as would be specified, it is estimated that the liner would resist oxidation for 225,000 years.

The cost estimate includes funds for unexpected costs such as the possibility of obtaining material from off site.

Reclamation appreciates comment on selecting appropriate seedmix, forbs and shrubs for the site. Reclamation, as part of the design to limit access on the site is presently considering a waste rock cover over the cap in lieu of constructing a fence to discourage recreation use. Other reasons for this rock covering include 1) the lack of suitable topsoil in the region and 2) the difficulty of establishing the plant growth in an arid environment. Therefore, the use of seedmix, shrubs or forbs may not be desirable.

9. All of the sludge in the holding pond will be excavated and relocated to the pregnant pond fill area.

During Reclamation's investigation of the site, an attempt was made to sample the existing sediment layers in the pregnant pond. The sampling apparatus used was able to break through the sediment layers to a depth of 1.5 feet. A depth of 4 feet was estimated as the total depth of sediment present, and this figure was used for estimating cost and volumes to be placed on the heap leach pad.

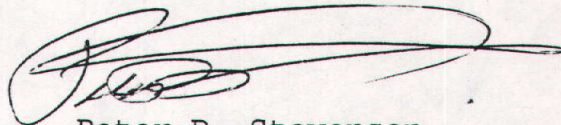
Evidence from studies conducted at the site show that uranium is a natural occurring element in the area as opposed to being a result of the mining efforts which took place at the site.

Trip report, dated December 14, 1989, by John Hultquist of Utah Bureau of Radiation Control (BRC), and Jason Knowlton of the Bureau of Solid and Hazardous Waste, concludes "No areas were located with radiation levels which were substantially above background or which presented a significant hazard. The highest reading obtained was approximately twice the background level and was located on top of the leach pad near the north end of the pad. A soil sample was taken from this location and will be analyzed for radioactive emissions by BRC." The results of this soil sample was 6 pCi/g for Beta gross, and 6 pCi/g for Alpha gross. Based on this information, Reclamation does not consider radioactivity of the materials a concern. However, as part of the design, a personnel monitoring program will be suggested as part of the Site Safety and Health Plan.

10. Reclamation agrees with the Division and BLM that a barrier to prohibit damage to the cap is necessary. Because of the history of vandalism on this site, all options will be considered in developing an appropriate barrier in the design. This barrier may include a security fence, or preferably will be constructed using natural materials designed to discourage human activity and prevent disturbance to the cap.
11. EPA realizes the Division's position in this matter, and has committed what we believe is adequate funding to complete the Removal action.

Again, thank you for your concern regarding the Leeds Silver Site. Professional and informed comments are always welcomed during the planning and implementation phases of such a project. I have enjoyed working with your staff members, and with the UDOGM personnel, on the issues regarding this site, and look forward to continuing this relationship in the future.

Sincerely,



Peter D. Stevenson,
Federal On-Scene Coordinator
Emergency Response Branch

cc: D. Wayne Hedberg, UDOGM
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